

## Textbook Alignment to the Utah Core – 6<sup>th</sup> Grade Science

*This alignment has been completed using an “Independent Alignment Vendor” from the USOE approved list ([www.schools.utah.gov/curr/imc/indvendor.html](http://www.schools.utah.gov/curr/imc/indvendor.html).)* Yes \_\_\_\_\_ No **X**

Name of Company and Individual Conducting Alignment: Independent Contractor, Lori Catan

A “Credential Sheet” has been completed on the above company/evaluator and is (Please check one of the following):

☐ On record with the USOE.

**X** The “Credential Sheet” is attached to this alignment.

Instructional Materials Evaluation Criteria (name and grade of the core document used to align): Grade 6 Science

Title: HSP Science ISBN#: 9780153609428; 9780153609657

Publisher: Harcourt School Publishers

Overall percentage of coverage in the *Student Edition (SE)* and *Teacher Edition (TE)* of the Utah State Core Curriculum: 87 %

Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum: 71 %

**STANDARD I: Students will understand that the appearance of the moon changes in a predictable cycle as it orbits Earth and as Earth rotates on its axis.**

**Percentage of coverage in the *student and teacher edition* for  
Standard I: \_\_\_\_\_86\_\_\_\_\_ %**

**Percentage of coverage not in student or teacher  
edition, but covered in the *ancillary material* for  
Standard I: \_\_\_\_\_0\_\_\_\_\_ %**

### OBJECTIVES & INDICATORS

**Coverage in *Student  
Edition (SE) and Teacher  
Edition (TE)* (pg #'s, etc.)**

**Coverage in *Ancillary  
Material* (titles, pg  
#'s, etc.)**

***Not covered  
in TE, SE or  
ancillaries* ✓**

**Objective 1.1:** Explain patterns of changes in the appearance of the moon as it orbits Earth.

**a.** Describe changes in the appearance of the moon during a month.

D 504-505, 506-  
507, 509, 536-  
537

LM 146-148  
RS 87, 90-91  
AG 80, 88  
ESL 162, 168-171  
GO 11-2

**b.** Identify the pattern of change in the moon's appearance.

D 503, 504-505,  
506-507, 509,  
536-537

LM 146-148  
RS 87, 90-91  
AG 80, 88  
ESL 162, 168-171  
GO 11-2

**c.** Use observable evidence to explain the movement of the moon around Earth in relationship to Earth turning on its axis and the position of the moon changing in the sky.

4

**d.** Design an investigation, construct a chart, and collect data depicting the phases of the moon

D 504-505

LM 146-148  
ESL 171

<b>Objective 1.2:</b> Demonstrate how the relative positions of Earth, the moon, and the sun create the appearance of the moon's phases.				
<b>a.</b>	a. Identify the difference between the motion of an object rotating on its axis and an object revolving in orbit.	D 494-495, 506, 536	ESL 164–167 AG 79 TR 21 RS 88, 89	
<b>b.</b>	Compare how objects in the sky (the moon, planets, stars) change in relative position over the course of the day or night.	D 494, 508		
<b>c.</b>	Model the movement and relative positions of Earth, the moon, and the sun.	D 492-501, 513, 537	RS 92 AG 88 ESL 164–167 IS 11-1	

STANDARD II: Students will understand how Earth's tilt on its axis changes the length of daylight and creates the seasons.				
Percentage of coverage in the <i>student and teacher edition</i> for Standard II: <u>88</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard II: <u>12</u> %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 2.1:</b> Describe the relationship between the tilt of Earth's axis and its yearly orbit around the sun.				
<b>a.</b>	Describe the yearly revolution (orbit) of Earth around the sun.	D 495-497, 501, 536–537	ESL 164–167 RS 87	
<b>b.</b>	Explain that Earth's axis is tilted relative to its yearly orbit around the sun.	D 496-497, 501, 537	ESL 164–167	
<b>c.</b>	Investigate the relationship between the amount of heat absorbed and the angle to the light source.	D 458, 496–497, 537	RS 88 TR 21	
<b>Objective 2.2:</b> Explain how the relationship between the tilt of Earth's axis and its yearly orbit around the sun produces the seasons.				
<b>a.</b>	Compare Earth's position in relationship to the sun during each season.	D 496-497	ESL 165 AG 83–84	
<b>b.</b>	Compare the hours of daylight and illustrate the angle that the sun's rays strikes the surface of Earth during summer, fall, winter, and spring in the Northern Hemisphere.	D 496-497	AG 83–84, 87 ESL 165 TR 21	
<b>c.</b>	Use collected data to compare patterns relating to seasonal daylight changes.		AG 8384 ESL 165	

<b>d.</b>	Use a drawing and/or model to explain that changes in the angle at which light from the sun strikes Earth, and the length of daylight, determine seasonal differences in the amount of energy received.	D	496–497	TR 21 RS 88 AG 83–84, 87 ESL 165, 167
<b>e.</b>	Use a model to explain why the seasons are reversed in the Northern and Southern Hemispheres.	D	496–497	AG 84

<b>STANDARD III: Students will understand the relationship and attributes of objects in the solar system.</b>				
<b>Percentage of coverage in the <i>student and teacher edition</i> for Standard III: _____ 92 _____ %</b>		<b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard III: _____ 0 _____ %</b>		
<b>OBJECTIVES &amp; INDICATORS</b>		<b>Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)</b>	<b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b>	<b><i>Not covered in TE, SE or ancillaries</i> ✓</b>
<b>Objective 3.1:</b> Describe and compare the components of the solar system.				
<b>a.</b>	Identify the planets in the solar system by name and relative location from the sun.	D 494–495, 508, 512–513, 521	LM 149–151 RS 92–93 GO 11-3 ESL 172–174	
<b>b.</b>	Using references, compare the physical properties of the planets (e.g., size, solid or gaseous).	D 494–495, 508, 514-515, 516-517, 521	ESL 173 AG 80, 81 RS 92 LM 151	
<b>c.</b>	Use models and graphs that accurately depict scale to compare the size and distance between objects in the solar system.	D 512-513	ESL 173	
<b>d.</b>	Describe the characteristics of comets, asteroids, and meteors.	D 514-515, 518-519, 520, 521	AG 79 RS 92	
<b>e.</b>	Research and report on the use of manmade satellites orbiting Earth and various planets.	D 510, 534–535	ESL 172	
<b>Objective 3.2:</b> Describe the use of technology to observe objects in the solar system and relate this to science’s understanding of the solar system.				
<b>a.</b>	Describe the use of instruments to observe and explore the moon and planets.			4

<b>b.</b>	Describe the role of computers in understanding the solar system (e.g., collecting and interpreting data from observations, predicting motion of objects, operating space probes).	D	534-535		
<b>c.</b>	Relate science's understanding of the solar system to the technology used to investigate it.	D	514, 515, 516, 534-535		
<b>d.</b>	Find and report on ways technology has been and is being used to investigate the solar system.	D	515, 516, 534-535		
<b>Objective 3.3:</b> Describe the forces that keep objects in orbit in the solar system.					
<b>a.</b>	Describe the forces holding Earth in orbit around the sun, and the moon in orbit around Earth.	F	740-741, 743, 747	RS 133	
<b>b.</b>	Relate a celestial object's mass to its gravitational force on other objects.	D F	500 740-741, 742, 743		
<b>c.</b>	Identify the role gravity plays in the structure of the solar system.	D F	516, 518, 519, 521 738-739, 740-741, 743	RS 133	

<b>STANDARD IV: Students will understand the scale of size, distance between objects, movement, and apparent motion (due to Earth's rotation) of objects in the universe and how cultures have understood, related to and used these objects in the night sky.</b>			
<b>Percentage of coverage in the <i>student and teacher edition</i> for Standard IV: <u>33</u> %</b>		<b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard IV: <u>0</u> %</b>	
<b>OBJECTIVES &amp; INDICATORS</b>		<b>Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)</b>	<b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b> <i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 4.1:</b> Compare the size and distance of objects within systems in the universe.			
<b>a.</b>	Use the speed of light as a measuring standard to describe the relative distances to objects in the universe (e.g., 4.4 light years to star Alpha Centauri; 0.00002 light years to the sun).		<b>4</b>
<b>b.</b>	Compare distances between objects in the solar system.	D 512–513, 520, 534–525	LM 152–154 RS 95
<b>c.</b>	Compare the size of the Solar System to the size of the Milky Way galaxy.	C 530	
<b>d.</b>	Compare the size of the Milky Way galaxy to the size of the known universe.	D 530	
<b>Objective 4.2:</b> Describe the appearance and apparent motion of groups of stars in the night sky relative to Earth and how various cultures have understood and used them.			
<b>a.</b>	Locate and identify stars that are grouped in patterns in the night sky.		<b>4</b>
<b>b.</b>	Identify ways people have historically grouped stars in the night sky.		<b>4</b>

<b>c.</b>	Recognize that stars in a constellation are not all the same distance from Earth.			<b>4</b>
<b>d.</b>	Relate the seasonal change in the appearance of the night sky to Earth's position.			<b>4</b>
<b>e.</b>	Describe ways that familiar groups of stars may be used for navigation and calendars.			<b>4</b>

<b>STANDARD V: Students will understand that microorganisms range from simple to complex, are found almost everywhere, and are both helpful and harmful.</b>			
Percentage of coverage in the <i>student and teacher edition</i> for Standard V: <u>92</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard V: <u>8</u> %	
<b>OBJECTIVES &amp; INDICATORS</b>		<b>Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)</b>	<b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b> <i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 5.1:</b> Observe and summarize information about microorganisms.			
<b>a.</b>	Examine and illustrate size, shape, and structure of organisms found in an environment such as pond water.	A 116, 124, 125, 126 B 211, 216–217 D 406, 436–437	ESL 145 GO 2-2 AG 8, 10, 21, 33 LM 72, 74, 131–133 ALR <i>Extreme Habitats</i> 9 ALR <i>Focus on Fungi</i> 10–11
<b>b.</b>	Compare characteristics common in observed organisms (e.g., color, movement, appendages, shape) and infer their function (e.g., green color found in organisms that are producers, appendages help movement).	A 116, 125, 126 B 216–217 D 439	ESL 67 AG 8, 10, 21, 33 LM 72, 74, 131–133 ALR <i>Extreme Habitats</i> 9 ALR <i>Focus on Fungi</i> 10–11
<b>c.</b>	Research and report on a microorganism's requirements (i.e., food, water, air, waste disposal, temperature of environment, reproduction).	A 124, 125, 126 B 209, 217, 260–261, 262–263, 264 D 439, 444	AG 33 ALR <i>Extreme Habitats</i> 9 ALR <i>Focus on Fungi</i> 10–11

<b>Objective 5.2:</b> Demonstrate the skills needed to plan and conduct an experiment to determine a microorganism's requirements in a specific environment.				
<b>a.</b>	Formulate a question about microorganisms that can be answered with a student experiment.	A 124 B 217	LM 74, 133	
<b>b.</b>	Develop a hypothesis for a question about microorganisms based on observations and prior knowledge.	A 124 B 217	LM 74, 133	
<b>c.</b>	Plan and carry out an investigation on microorganisms. {Note: Teacher must examine plans and procedures to assure the safety of students; for additional information, you may wish to read microbe safety information on Utah Science Home Page. }	A 124 B 217	LM 74, 133	
<b>d.</b>	Display results in an appropriate format (e.g., graphs, tables, diagrams).	A 124 B 216	LM 72, 74, 131–133 ESL 145	
<b>e.</b>	Prepare a written summary or conclusion to describe the results in terms of the hypothesis for the investigation on microorganisms.	A 124 B 217	LM 72, 74, 131–133	
<b>Objective 5.3:</b> Identify positive and negative effects of microorganisms and how science has developed positive uses for some microorganisms and overcome the negative effects of others.				
<b>a.</b>	Describe in writing how microorganisms serve as decomposers in the environment.	B 199, 209, 261, 262-263, 264	ESL 81, 83 RS 36, 45	
<b>b.</b>	Identify how microorganisms are used as food or in the production of food (e.g., yeast helps bread rise, fungi flavor cheese, algae are used in ice cream, bacteria are used to make cheese and yogurt).	A 124 D 439, 444	ALR <i>Extreme Habitats</i> 9 AG 86	
<b>c.</b>	Identify helpful uses of microorganisms (e.g., clean up oil spills, purify water, digest food in digestive tract, antibiotics) and the role of science in the development of understanding that led to positive uses (i.e., Pasteur established the existence, growth, and control of bacteria; Fleming isolated and developed penicillin).	A 126, 209 B 222, 236, 262-263 D 439, 444	ESL 81, 83 AG 86 RS 36, 45	

<b>d.</b>	Relate several diseases caused by microorganisms to the organism causing the disease (e.g., athlete's foot -fungi, streptococcus throat - bacteria, giardia -protozoa).	B 220	HB 7, 106–107 ESL 66	
<b>e.</b>	Observe and report on microorganisms' harmful effects on food (e.g., causes fruits and vegetables to rot, destroys food bearing plants, makes milk sour).		HB 7, 106–107	

STANDARD VI: Students will understand properties and behavior of heat, light, and sound.				
Percentage of coverage in the <i>student and teacher edition</i> for Standard VI: <u>86</u> %			Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard VI: <u>14</u> %	
OBJECTIVES & INDICATORS			Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.) <i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 6.1:</b> Investigate the movement of heat between objects by conduction, convection, and radiation.				
<b>a.</b>	Compare materials that conduct heat to materials that insulate the transfer of heat energy.	E 565, 567 F 678-679, 682-683, 684, 685, 711	ESL 226, 228–231 LM 193–195 RS 122, 123 AG 115, 118 IS 15-1	
<b>b.</b>	Describe the movement of heat from warmer objects to cooler objects by conduction and convection.	F 682-683, 685, 710–711	AG 115, 118 RS 122, 123 ESL 228, 231 GO 15-1	
<b>c.</b>	Describe the movement of heat across space from the sun to Earth by radiation.	F 683, 685, 710	RS 122, 123 AG 115 ESL 228–231 GO 15-1	
<b>d.</b>	Observe and describe, with the use of models, heat energy being transferred through a fluid medium (liquid and/or gas) by convection currents.	F 681, 682–683		
<b>e.</b>	Design and conduct an investigation on the movement of heat energy.	F 679, 681	LM 195	
<b>Objective 6.2:</b> Describe how light can be produced, reflected, refracted, and separated into visible light of various colors.				

<b>a.</b>	Compare light from various sources (e.g., intensity, direction, color).	D 524–525 F 656-657, 664-667	LM 152–154	
<b>b.</b>	Compare the reflection of light from various surfaces (e.g., loss of light, angle of reflection, reflected color).	F 662–665, 668, 669, 673	LM 190–192 IS 14-3 RS 14-3	
<b>c.</b>	Investigate and describe the refraction of light passing through various materials (e.g., prisms, water).	F 666-667, 672	RS 114, 120 AG 110 ESL 225 GO 14-3	
<b>d.</b>	Predict and test the behavior of light interacting with various fluids (e.g., light transmission through fluids, refraction of light).	F 667		
<b>e.</b>	Predict and test the appearance of various materials when light of different colors is shone on the material.		AG 110	
<b>Objective 6.3:</b> Describe the production of sound in terms of vibration of objects that create vibrations in other materials.				
<b>a.</b>	Describe how sound is made from vibration and moves in all directions from the source in waves.	F 654–655	GO 14-2 RS 118	
<b>b.</b>	Explain the relationship of the size and shape of a vibrating object to the pitch of the sound produced.	F 654-655	ESL 220 AG 111 RS 118	
<b>c.</b>	Relate the volume of a sound to the amount of energy used to create the vibration of the object producing the sound.	F 654-655		
<b>d.</b>	Make a musical instrument and report on how it produces sound.		ESL 220	